

Notice of Allowability	Application No.	Applicant(s)	
	10/666,530	FROMHERZ ET AL.	
	Examiner	Art Unit	
	Paul C. Martin	1657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant's amendment filed 10/31/06.
2. ☒ The allowed claim(s) is/are 1,5,7,9,12 and 13.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|---|--|

EXAMINER'S AMENDMENT

Claims 1, 5, 7-10, 12 and 13 are pending in this application and were examined on their merits.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Patrick Skacel on 02/01/07 and by Fax on 02/09/07.

The Application has been amended as follows:

IN THE SPECIFICATION:

Pg. 1, Line 1, Insert: TITLE OF THE INVENTION

Pg. 1, Line 9, Insert: BACKGROUND OF THE INVENTION

Pg. 1, Line 20, Insert: BRIEF SUMMARY OF THE INVENTION

Pg. 2, Line 32, Insert: BRIEF DESCRIPTION OF THE FIGURES

Figure 1: Shows a cell which is immobilized on a field-effect transistor with a drain, a source and a gate, and which contains an ion channel in its membrane, for example the KV1.3 potassium channel. The surface of the electrode is coated with fibronectin. A patch electrode for setting a defined potential is furthermore introduced into the cell.

Figure 2: Demonstrates an embodiment of the invention relating to the measurement of target components, for example closed or open ion channels, when AC voltage is applied.

Figure 3: The transfer function V_i/V_E is used to locate immobilized cells when an electrode array is used. One individual cell is preferably tested per electrode. (A): (1): shows the profile of h without a cell; (2) shows the profile of h with a cell. (B): (1): the phase of h without a cell is shown as a curve; (2) the phase of h with a cell is shown as a curve.

Figure 4: Shows a transfected cell which has adhered to the gate of an ESOFET (electrolyte oxide silicon field-effect transistor), before (A) and after (B) the measurement by a patch clamp.

Figure 5: Shows the effect of physiological extracellular solution. The voltage in the cell V , the current in the cell I and the gate voltage drop in the gap V_i are plotted against time. The pulse length is 50 ms. The measurements are carried out in the voltage-clamp mode. The current exhibits the typical time dependency of the KV1.3 channel.

Figure 6: The measurement when the extracellular solution is replaced by an NaCl-free solution (0 mM NaCl, 5 mM KCl, 1.8 mM CaCl₂, osmolality balanced to 340 mOsmol/kg with glucose, pH 7.4).

Figure 7: Shows the difference between the measurements with normal solutions and sodium-free solutions after stimulation by AC voltage.

IN THE CLAIMS:

Claims 8 and 10 are canceled.

1. (Currently amended) A method for determining whether a substance is a modulator of an ion-channel/receptor system containing a ligand controlled or mechanically controlled ion channel, comprising the steps of:

- (a) preparing a cell, which contains the ion-channel/receptor system, wherein the cell is immobilized on an extracellular potential-sensitive electrode,
- (b) bringing a substance to be tested in contact with the cell, in a medium which has a total salt concentration of ≤ 100 mmol/L,
- (c) stimulating the ion-channel/receptor system,
- (d) measuring a signal at the electrode due to the ion-channel/receptor system, and
- (e) determining the effect of the substance to be tested on the measurement signal.

5. (Currently amended) The method according to Claim 1, characterized in that the ion channel is a potassium channel.
7. (Previously presented) The method according to Claim 1, characterized in that the ion-channel/receptor system contains an NMDA, GABA, AMPA or acetylcholine receptor.
9. (Currently amended) The method according to Claim [[8]]1, characterized in that the stimulation of the ion-channel/receptor system comprises ~~electrical, optical or/and~~ chemical stimulation or mechanical stimulation.
12. (Currently amended) The method according to Claim 1, characterized in that the potential-sensitive extracellular electrode is arranged on a chip.
13. (Currently amended) The method according to Claim 1, characterized in that an array comprising a multiplicity of cells immobilized on different electrodes is prepared, and a multiplicity of substances are tested.

The following is an examiner's statement of reasons for allowance: The closest prior art is Fromherz *et al.* which teaches a method for determining whether a substance is a modulator of a membrane-associated voltage-controlled, ligand-controlled or mechanically controlled ion-channel/receptor system.

The reference however, does not teach the performance of the method which uses a medium which has a total salt concentration of less than or equal to 100 mM/L.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 1, 5, 7, 9, 12 and 13 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul C. Martin whose telephone number is 571-272-3348. The examiner can normally be reached on M-F 8am-4:30pm.

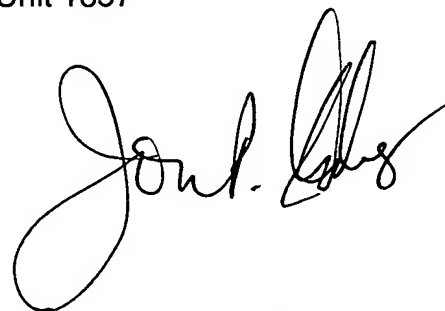
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1657

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paul Martin
Examiner
Art Unit 1657

01/25/07

A handwritten signature in black ink, appearing to read "Jon Weber", with a large, stylized loop at the beginning and a long, sweeping tail.

Jon Weber
Supervisory Patent Examiner